

# INCUBATORS: TOOL FOR TECHNOLOGY ENTREPRENEURSHIP PROGRAM

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## ABSTRACT

*This paper reviews a model that improves our understanding the role of University-based Incubators (UBI) as a tool in developing technological entrepreneur in university. Specifically, focus on the impact of the incubator management and services offered, namely infrastructure, facilities and services, funding, incubator governance, entry and exit criteria, mentoring and networking and expertise support system from university. The paper also focuses on the dynamic process of incubation and concludes by underlining the importance of incubator. This paper is produced from the research and observation which made on incubator journal, article and dissertation from Europe and USA. It warns against non-accurate evaluation of the impact of incubator. However, major criteria of incubator that produce technological entrepreneur already accounted from the papers. This paper will focus on the UBI as a tool in developing technological entrepreneur especially university graduate in Malaysia.*

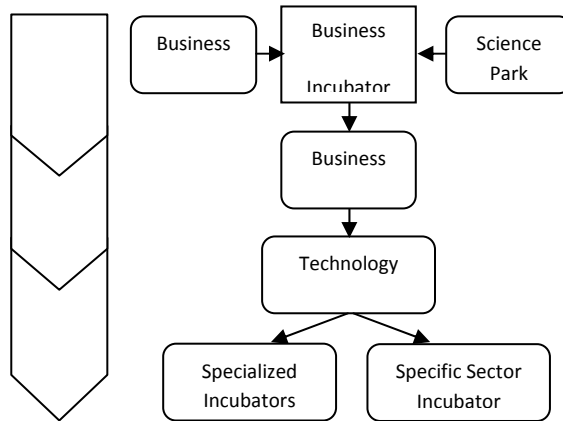
**Keywords:** University-Based Incubator (UBI), Science & Technology Park, Technological Incubator

## INTRODUCTION

The first incubator concept has been implemented by Batavia Industrial Center, New York in 1959, but the concept became popular and accepted in 1980s. In the decade of computer technology era in 1990s, incubators without walls or virtual incubator were formed. These incubators are often primarily virtual and usually funded by venture capitalist or angels that are using concept of capital sharing with payback comes from the equity investment.

In the late of 1990s, specialized incubators focusing on specific industry (Information & communication technology (ICT), bio-informatics, etc) or specific types of technologies (telecommunication, network, etc) appeared because of the opportunities presented. These types of incubators are specialized technology focus mostly established by technological based company, government agencies or private sector organizations and universities.

Lalkaka define that the evolution of the incubator concept as follows: “*first generation incubators in the 1980s were essentially offering affordable space and shared facilities to carefully selected entrepreneurial group. In 1990s, new incubation model emerged in parallel. This is intended to mobilize start-ups and provide a convergence of support, towards creating growth potential, technology-based venture*”. Figure 1 illustrates the evolution of the business incubator concept.



**Figure 1: Evolution of the Business Incubator Model**

Technology Incubator have been defined as organizations that provide assistance and support services to firms to help them survive and grow during the star-up period and to promote economic development (Stevenson & Wetterhall, 2001; Rice 2004). Nowadays in Malaysia, University-based Incubator (UBI) concept was introduced in early 2000s. According to Incubator Programme MDeC (2007), Malaysian public university that set-up the UBI is Universiti Teknologi Malaysia (UTM), Universiti Utara Malaysia (UUM) and Universiti Putra Malaysia (UPM).

University-based Incubator (UBI) are nurturing environment that created by universities to link entrepreneurial talent among graduates with technology spirit, capital and know-how to develop of new technology based firms/businesses and to speed university technology commercialization (Bahar, 2008).

## DEFINING INCUBATORS

Incubators are organizations that support the technological entrepreneurship process (Peters, 2004). To make incubator as a place that fully support the entrepreneurial development especially in the university, there are several important characteristic and element must prepared to support this entrepreneurial development program. Technological entrepreneur (technopreneur) candidate with feasible and viable project ideas are selected and admitted into the incubators, will offered a specialized menu of support resources and services. Here, technopreneur will be nurture and give all the right resources and support services before go to the market.

There is no prototypical business incubator. Some incubators provide physical resources, such as space, shared services and assistance with start-up costs. Others focus more on providing managerial and entrepreneurial resources. Incubators represent different things to different organizations, directing their efforts based on diverse economic conditions and entrepreneurship objectives. One of the main goals of UBI programs is to produce successful graduates with degree and graduate in business that financially viable and free standing when they leave the incubators, usually in two to three years. By providing technopreneurs with services on a 'one-stop' basis, and enabling technopreneur to reduce their overhead costs by sharing facilities, business incubators are able to significantly improve the survival and growth prospect of new start-ups (Malan, 2002).

## IMPORTANT ELEMENT FOR INCUBATOR

Based on U.K Business Incubator (UKBI; 2007) and from previous studies, there have been more than fifty variables that affect the success of business incubators based on situation in

Malaysian university (Bahar, S; 2008). These variables are grouped into seven factors based on their similar characteristics, literature review and the definition of incubators. These factors are 1) support services, 2) facilities and location, 3) funding and support, 4) incubator governance, 5) entry and exit criteria, 6) mentoring and networking and 7) expertise support system from university. Table 1 provides a summary of the variables identified and grouped into seven factors. For example under support services there are; logistic or physical services. Facilities and location includes work space and location factor. Financing arrangement or organizational arrangement is under funding and support factor. Incubator governance consists of; policies and procedures, board of director and advisory council. Entry and exit criteria consists of; present a viable product and services, present a business plan, unique opportunity and advanced technology related firm. Affiliations with key institution (public and private), entrepreneurial network and community support comprise the mentoring and networking factor. Finally, expertise support system from university that provides expertise, knowledge, resource and experience from the university lecturers and researchers. Each of the factors will explained in detail in the following sections.

Table 1: Incubator Elements

<b>Support services</b>	<b>Logistic or Physical Services</b> Security services, conference room, furniture and equipment, library, computers, photocopier and fax, telephone, post box etc
	<b>Business Support Services</b> Receptionist, typing, filing, audio-visual equipment etc.
<b>Facilities and Location</b>	Work space (size), location etc
<b>Funding and Support</b>	Financing arrangement, organizational arrangement etc
<b>Incubator Governance</b>	An experienced incubator manager, a key board director, noted advisory council, program milestones with clear policies and procedures etc
<b>Entry and Exit Criteria</b>	Present a viable product and services, present a business plan, unique opportunity, advanced technology related firm etc
<b>Mentoring and Networking</b>	Entrepreneurial network, entrepreneurial education, community support, affiliation with key institution (public and private) etc
<b>Expertise support from University</b>	<b>Business Consulting Assistance or Expertise (Financial)</b> Risk management, government grant, government procedure process, government contract preparation etc.
	<b>Business Consulting Assistance or Expertise (Management)</b> Business plan preparation, advertising and marketing etc
	<b>Business Consulting Assistance or Expertise (Professional Business Services)</b> Legal counseling, patent and intellectual property assistance, accounting, introduction to venture capitalist etc

### Support Services

The start-up phase of a small business is associated with considerable uncertainty regarding the operating levels of the business. Services that provide in the incubator can be divided into two

categories: logistical or physical services and business support. Incubators may provide support services that help start-up firm to reduce cost of business. By providing logistic or physical services like provide conference room, furniture and equipment, computers and etc; new technopreneur can avoid the purchase of office equipment that can save a lot of capital. With support services located in the facility like audio-visual equipment, receptionist and others; technopreneur can run and accelerate their business smoothly.

### **Facilities and Location**

UBI in Malaysia provide space at free cost for their technopreneur candidate. The incubator facilities are generally designed to allow firms to move within them as they expand. From literature and past research, another factor in determining incubator success is location. 57% of incubators are located in a major city (Young, 2001). Mian (2006) also found in their study that 60% of incubators have only one location that too, situated in big cities. The location of incubators in cities near research parks, universities or research labs that designed to offer entrepreneurs access to the wider facilities, individuals and business opportunity. Entrepreneurs also are able to work with experienced, successful entrepreneur and may engage in strategic alliances to exploit and expand the business opportunity. And because of that, university is the best place to set-up incubator.

### **Funding and Support**

Incubator financing is depending on sponsored from private, public agencies or government. For private sector sponsors include corporate money and direct donations from venture capitalist or angles. Public sponsors include from federal, state and local district. Major sponsor of the incubator are involved in a variety of active and passive ways in the form of financial support, advising technopreneur, and working as consultants to technopreneurs. Majlis Amanah Rakyat (MARA) is one government agency that fully sponsors and supports technopreneurs candidate in UBI. The incubator must organize a funding or organizational arrangement that can be attend by venture capitalist and angles that can give a chance for the technopreneur to get some capital to develop their product.

### **Incubator Governance**

Good incubator governance must have clear policies and procedure with experienced managerial board. The management structures will consists incubator manager, board of director and advisory council that gives recommending, reviewing and approving entrepreneurs for inclusion in the incubator (UKBI, 2007). Executive boards are defining frequently involving investor or financial contributor and individuals with business and technical knowledge to set up the incubator policy. Advisory board is defined as an individual's that can give recommendation but generally not involved in policy matters.

### **Entry and Exit Criteria**

If an incubator seeks to build companies, then it must have a selection process through which it evaluates, recommends and select firms (UKBI, 2007). Unless there is some set of criteria by which determine technopreneur selection, there is no frame of reference for judging whether they is on the track or not. Different types of incubators have different purposes. Private sponsored facilities are likely to emphasis the investment potential, business development and technology transfer while public sponsored facilities are more likely to stress job creation and economic diversification. The objectives of different incubators can be operationally interpreted as a set of entry and exit policies. Entry policies are formulated in two ways. Firstly, general criteria may be applied to the admission firms. Secondly, certain specific types of firms may not be permitted to enter the facilities. The entry criteria for technopreneurs selection are; ability to present business plan, have a unique idea and opportunity, advanced technology related etc. Exit criteria are not as extensive as entry criteria. Generally, exit policy is defined by a time limit to the technopreneur.

### **Mentoring and Networking**

Entrepreneurship is a dynamic process and it requires links or relationship not only among and between individuals but also among variety of institutions (Mian, 2006 and UKBI, 2007). An entrepreneurial network can provide links and relationship that can promote and sustain the new venture in an incubator. Entrepreneurial education is important because if the time limit using the facilities is due or the companies become bigger they must eventually stand on their own. The protected environment of incubator makes them hard to leave. The expectation of technopreneur for continued support, the ability is to access with business expertise and the general comfort working in an environment, can make them comfortable in the incubator. To deal with this problem, many incubators are addressing the need for entrepreneurial education (Mian, 2006). It seeks to develop the skills of some the necessary know-how in entrepreneurs so that they can extend their own abilities in running a company. Community support plays an important role in sustaining incubator development and incubator success. Mian (2006) identified affiliation between private or public key institution is an important intangible element. Affiliation with institutions will provide entrepreneurs with access to a wide range of skills and services.

### **Expertise support from university**

Expertise support system consist consulting services of financial, management assistance, professional business assistance and technological issues. This altogether can be obtained at university through lecturer or researcher. This is because new firms or technopreneurs have limited skills and knowledge. Contribution forms of knowledge and experience from the expert can make technopreneurs more comfortable and confident.

## **CONCLUSION**

University-based Incubator (UBI) have a strong foundation for all aspects; in term of location side, facilities, support service, networking and expertise access from university that can promote and sustain the new venture in an incubator. As a conclusion, University-based Incubator (UBI) existence was one best move as a tool for universities to develop technopreneur through technology entrepreneurship program in the university.

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